Kramer Electronics, Ltd.

USER MANUAL

Model:

VS-3232DVI

32x32 DVI Matrix Switcher

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Congratulations on purchasing your Kramer **VS-3232DVI** *32x32 DVI Matrix Switcher*. This product is ideal for the following typical applications:

- Professional display systems requiring video signal routing
- Broadcast, presentation and production facilities, as well as monitoring in large duplication systems
- Rental/staging applications

The package includes the following items:

- **VS-3232DVI** *32x32 DVI Matrix Switcher*
- Power cord
- Kramer **RC-IR3** infrared remote control transmitter (including the required batteries and a separate user manual[2]) and this user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance, high resolution cables[3]

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

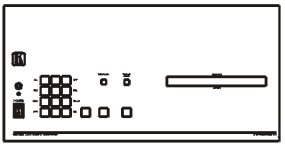
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from http://www.kramerelectronics.com

3 The complete list of Kramer cables is available from http://www.kramerelectronics.com

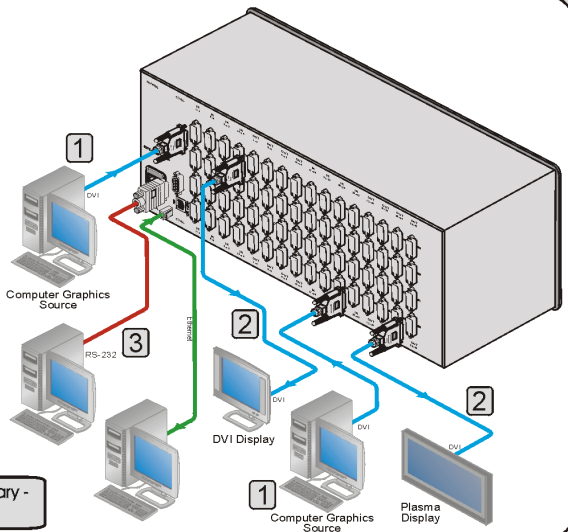
Step 1: Mount the machine - see Section 5

Mount the machine in a rack or
stick the 4 rubber feet to the underside



Step 2: Connect the inputs and outputs - see Section 6

1 Connect up to 32* inputs
2 Connect up to 32* outputs



* Your maximum number of ports may vary - see Section 9

Step 3: Connect the control port - see Section 6

If required, connect an RS-232 Control Port and/or the ETHERNET Port

Step 4: Turn the power ON

Step 5: Use the configuration menu - see Section 8

Use the Setup and Config menus to set the unit configuration

Step 6: Operate the machine - see Section 7

Operate via the front panel buttons, IR remote control, RS-232 and Ethernet

3 Overview

The Kramer **VS-3232DVI** is a high performance 32x32 matrix switcher[1] for DVI signals. It features a video bandwidth of over 1.65GHz that ensures transparent performance even in the most critical applications. The unit reclocks and equalizes the signal and can route any or all inputs to any or all outputs simultaneously.

The **VS-3232DVI** is highly configurable–you can add or remove both inputs and outputs independently in groups of four. For example, you can configure a device as a 4x24 or 32x12 matix switcher to perfectly suit your needs.

The **VS-3232DVI** features:

- Full 32x32 non-blocking matrix array to switch any of the 32 input DVI video signals to any or all outputs
- 59 preset memory locations for quick access to user-defined setups
- Fast access to a preprogrammed default preset configuration
- A default EDID (Extended Display Identification Data) assigned to each input
- The Kramer 2000 Protocol
- A 40 character by 2 line LCD showing operational status and configuration menu
- A LOCK function to prevent tampering with the front panel
- I-EDIDPro™ Kramer Intelligent EDID Processing™ – Intelligent EDID handling and processing algorithm ensures plug and play operation for DVI systems

You can operate the **VS-3232DVI** via the front panel buttons[2] or remotely via:

- RS-232 serial commands transmitted by a touch screen system, PC or other serial controller
- Ethernet
- The infrared remote control transmitter

The **VS-3232DVI** is housed in a 19" 5U rack mountable enclosure.

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality and position your Kramer **VS-3232DVI** in a location free from moisture and away from excessive sunlight and dust

1 Can also be configured for other sizes up to a maximum of 32 x 32

2 The VS-3232DVI is a sophisticated device but has been designed to be as simple as possible to operate. Due to space limitations on the front panel, 64 input/output selector buttons are instead substituted by a keypad. For details of how to route inputs to outputs, see Section 7.2

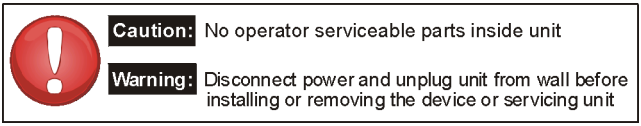
3.1 Defining EDID

The Extended Display Identification Data (EDID[1]) is a data-structure provided by a display, to describe its capabilities to a graphics card (that is connected to the display's source). The EDID enables the video source to "know" what kind of monitor is connected to the output. The EDID includes the manufacturer's name, the product type, the timing data supported by the display, the display size, luminance data and (for digital displays only) the pixel mapping data.

3.2 Recommendations for Best Performance

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your **VS-3232DVI** away from moisture, excessive sunlight and dust


Caution:
No operator serviceable parts inside unit
Warning:
Disconnect power and unplug unit from wall before installing or removing the device or servicing unit

4 Defining the VS-3232DVI 32x32 DVI Matrix Switcher

Figure 1, Table 1, Figure 2 and Table 2 define the front panel, and Figure 3 and Table 3 define the rear panel of the **VS-3232DVI**.

1 Defined by a standard published by the Video Electronics Standards Association (VESA)

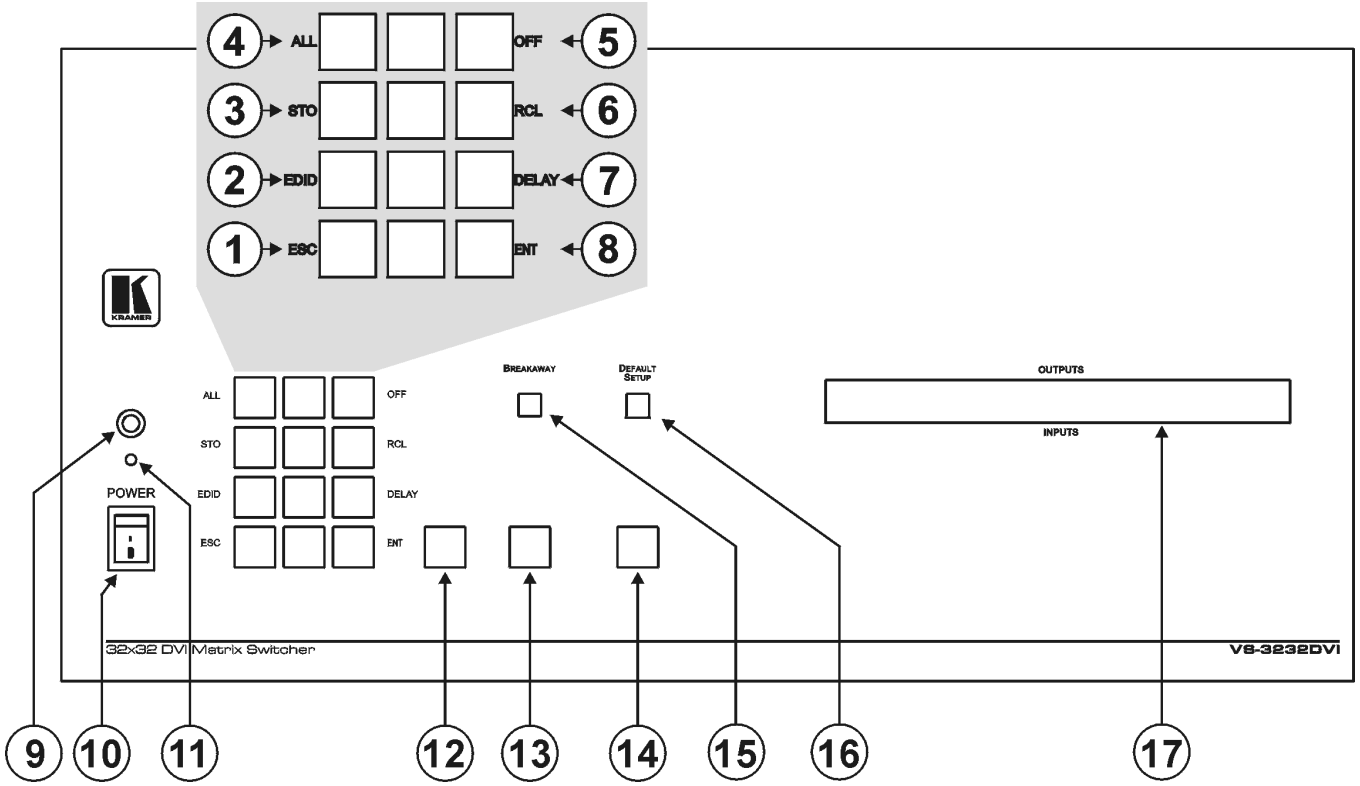


Figure 1: VS-3232DVI 32x32 DVI Matrix Switcher Front Panel

Note: Buttons 12, 13 and 14 function as the TAKE, MENU and LOCK buttons respectively

Table 1: Front Panel VS-3232DVI 32x32 DVI Matrix Switcher Front Panel Features

#	Feature			Function
1	Double-function Selector Buttons Area	Menu Buttons	*ESC*	Press to exit the current operation
2			*EDID*	Press to assign EDID channels
3			*STO*[1]	Press to store the current setup in the a preset
4			*ALL*[1]	Press to connect an input to all outputs
5			*OFF*[1]	Press to turn off an output
6			*RCL*[1]	Press to recall a preset
7			*DELAY*	Press to set the delay between confirming an action and the execution of the action
8			*ENT*	Press to complete the input-output setup when using a one-digit number instead of two digits[2]. Press to enter the options in a setup menu
9	IR Receiver LED			Infrared remote control sensor
10	Power Switch			Illuminated switch for turning the unit on or off
11	IR LED			Lights yellow when receiving commands from the IR remote control transmitter
12	*TAKE* Button			Press to confirm actions (see Section 7.3.2)
13	*MENU* Button			Press once to enable the ALL, OFF STO and RCL buttons (see Section 8). Press again to enter the configuration menu (see Section 8.2). When in a Menu, press to cycle through the menu items
14	*LOCK* Button			Press and hold for approximately 2 sec to lock/unlock the front panel buttons (see Section 7.5)
15	*BREAKAWAY* Button			Press to exit a Menu (see Section 8)
16	*DEFAULT SETUP* Button			Press to recall the default setup (see Section 7.4.5)
17	*OUTPUTS/INPUTS* LCD Display			Displays the outputs (upper row) switched to the selected inputs (lower row), (see Section 7.1). Displays user interface messages and menus

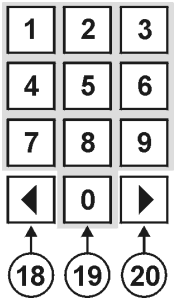


Figure 2: VS-3232DVI Numeric Keypad

Table 2: Front Panel VS-3232DVI Numeric Keypad Labels

#	Feature	Function
18	◄ (Backward)	Press to shift the sliding window to the right[3]
19	*1, 2, 3, 4, 5, 6, 7, 8, 9, 0*	Numeric keypad, 1 to 0
20	► (Forward)	Press to shift the sliding window to the left[3]

1 This button is enabled and lights after pressing the MENU button

2 For example, to enter input 5, you can either press 05 or 5, ENT

3 Since the LCD display is large enough to show only 13 cross-points out of a total of 32

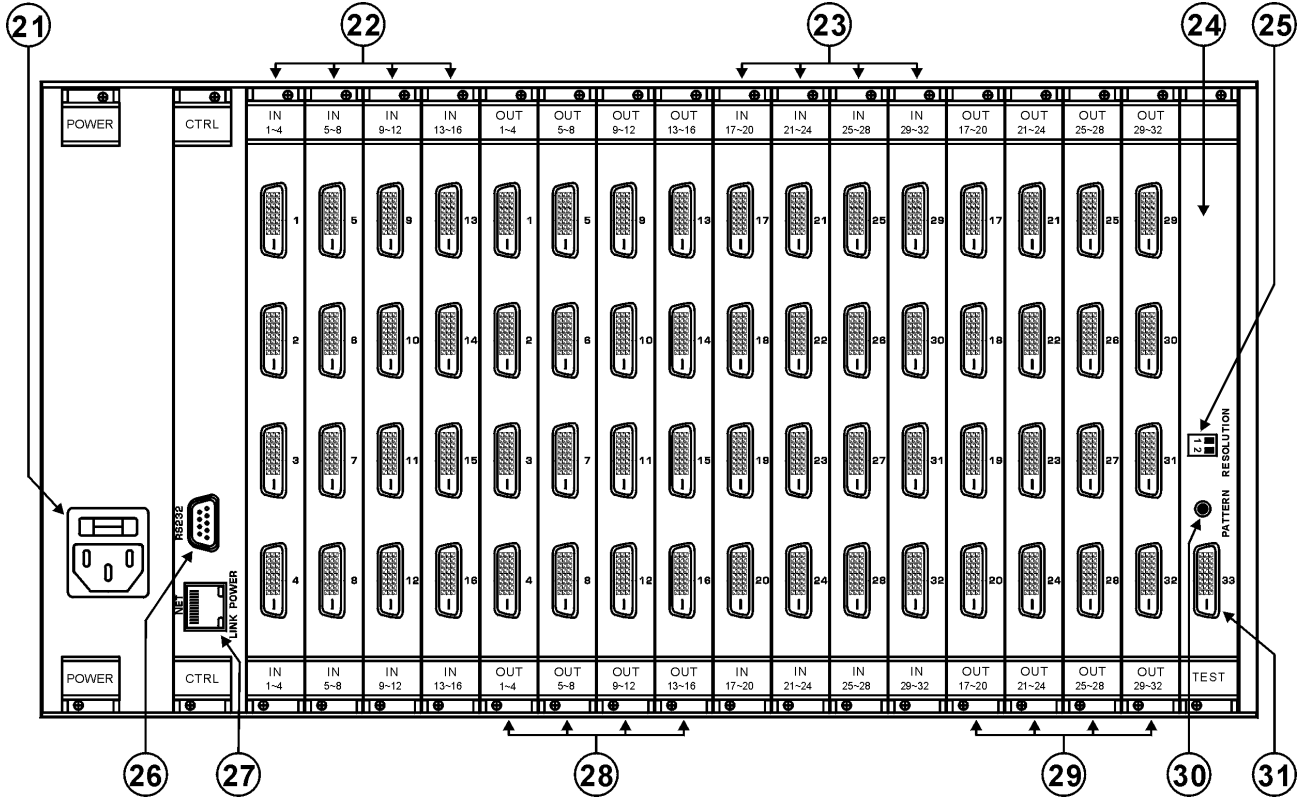


Figure 3: VS-3232DVI 32x32 DVI Matrix Switcher Rear Panel

Table 3: VS-3232DVI 32x32 DVI Matrix Switcher Rear Panel Features

#	Feature		Function
21	AC Mains Power Unit		Fuse holder and power cord socket. Connect to the AC mains supply
22	*IN 1~4, 5~8, 9~12, 13~16* DVI Connectors	INPUTS	Connect to the DVI video sources (1 to 16) (see Section 6)
23	*IN 17~20, 21~24, 25~28, 29~32* DVI Connectors		Connect to the DVI video sources (17 to 32) (see Section 6)
24	*TEST* Module		Signal generator module for testing video outputs
25	RESOLUTION DIP-switches		Set the resolution for video generated by the Test module (see Section 10.2)
26	*RS-232* 9-pin D-sub Port		Connects to the remote operation PC or remote controller[1] (see Section 6.1)
27	*NET* Ethernet RJ-45 Connector		Connect to a PC or controller via the Ethernet LAN (see Section 6.2). *LINK* LED flashes when communication is active. *POWER* LED lights when the interface receives power
28	*OUT 1~4, 5~8, 9~12, 13~16* DVI Connectors	OUTPUTS	Connect to the DVI video acceptors (1 to 16) (see Section 6)
29	*OUT 17~20, 21~24, 25~28, 29~32* DVI Connectors		Connect to the DVI video acceptors (17 to 32) (see Section 6)
30	*PATTERN* Button		Press the button to change the video pattern generated by the Test module (see Section 10.3)
31	*33* DVI Test Module Output Connector		Connect to one of the DVI video inputs to test video transmission

4.1 Using the IR Transmitter

You can use the **RC-IR3** IR transmitter to control the machine via the built-in IR receiver on the front panel.

1 If the unit is not the first unit in the line, connects to the RS-232 OUT 9-pin DB port of the previous unit in the line

5 Installing the VS-3232DVI in a Rack

This section provides instruction on rack mounting the **VS-3232DVI**.

Before Installing in a Rack

Before installing in a rack, be sure that the environment is within the recommended range:

Operating temperature range	+5° to +45° C (41° to 113° F)
Operating humidity range	10 to 90% RHL, non-condensing
Storage temperature range	-20° to +70° C (-4° to 158° F)
Storage humidity range	5 to 95% RHL, non-condensing

CAUTION!

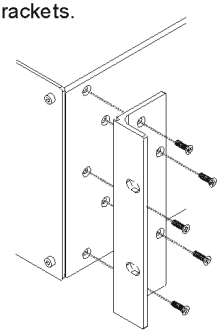
When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

How to Rack Mount

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (5 on each side), and replace those screws through the ear brackets.



2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from: http://www.kramerelectronics.com

6 Connecting the VS-3232DVI 32x32 DVI Matrix Switcher

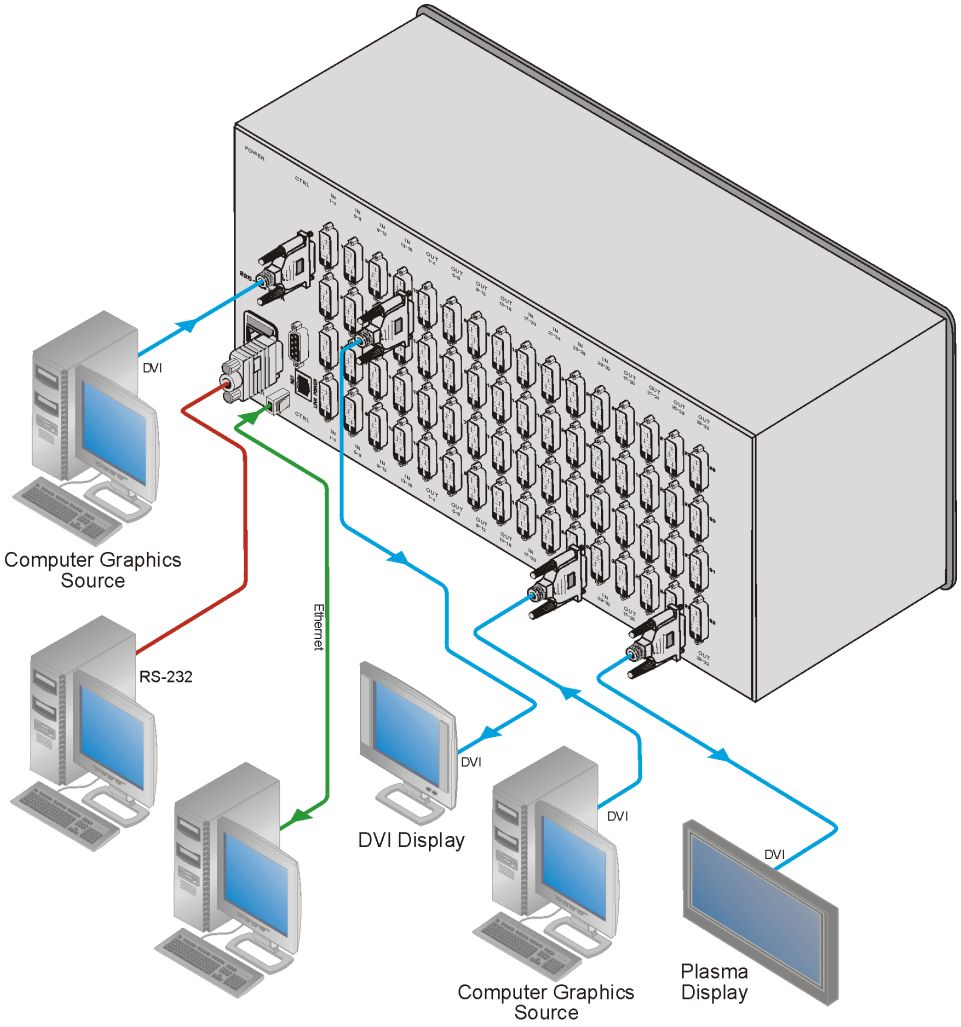


Figure 4: Connecting the VS-3232DVI

To install[1] the VS-3232DVI as illustrated in the example in Figure 4:

1. Connect up to 32 DVI video sources (for example[2], computer graphics sources).

1 Switch OFF the power on each device before connecting it to your VS-3232DVI

2 In this example only two inputs and two outputs are connected

2. Connect up to 32 DVI video acceptors (for example[2], a plasma display and a DVI LCD display).
3. If required, connect a PC or remote controller to the RS-232 port (see Section 6.1) and/or the Ethernet port (see Section 6.2).
4. Connect[1] the power cord[2].
5. If necessary, review and set the system configuration options using the Menus (see Section 8).

6.1 Connecting to the VS-3232DVI via RS-232

You can operate the **VS-3232DVI** remotely via the RS-232 interface if the distance between the unit and controller is less than 25m (80ft). If the distance is greater than 25m, use either an Ethernet connection via a LAN (see Section 6.2) or an RS-232 connection using, for example, a **Kramer Tools™ VP-43xl** *Interface Converter*.

The method of connecting to the RS-232 port on the **VS-3232DVI** depends on the gender of the 9-pin D-sub connector on your device. Verify whether your **VS-3232DVI** has a male or female 9-pin D-sub connector:

- If your 9-pin D-sub connector is male, use a crossed connection (see Section 6.1.1)
- If your 9-pin D-sub connector is female, use a straight through connection (see Section 6.1.2)

6.1.1 Connecting to a Male 9-pin D-sub Connector

A crossed cable is required as shown in Figure 5. If a shielded cable is used, connect the shield to pin 5.

To connect a PC or controller to the 9-pin D-sub male connector:

- Connect the RS-232 9-pin D-sub port on the unit via a crossed cable (only pin 2 to pin 3, pin 3 to pin 2, and pin 5 to pin 5 need be connected) to the RS-232 9-pin D-sub port on the PC.

Note: There is no need to connect any other pins.

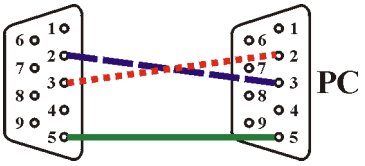


Figure 5: Crossed Cable RS-232 Connection

1 Note shown in Figure 4

2 We recommend that you use only the power cord that is supplied with this machine

Hardware flow control is not required for this unit. In the rare case where a controller requires hardware flow control, short pin 1 to 7 and 8, and pin 4 to 6 on the controller side.

6.1.2 Connecting to a Female 9-pin D-Sub Connector

A straight through cable is required. If a shielded cable is used, connect the shield to pin 5.

To connect a PC or controller to the 9-pin D-sub female connector:

- Connect the RS-232 9-pin D-sub rear panel port on the product unit via a 9-wire straight cable (only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 need to be connected) to the RS-232 9-pin D-sub port on your PC

Note: There is no need to connect any other pins.

Hardware flow control is not required for this unit. In the rare case where a controller requires hardware flow control, short pin 1 to 7 and 8, and pin 4 to 6 on the controller side.

6.2 Connecting to the VS-3232DVI via Ethernet

You can connect the **VS-3232DVI** via the Ethernet using a crossover cable (see Section 6.2.1) for direct connection to the PC, or a straight through cable (see Section 6.2.2) for connection via a network hub or network router[1].

6.2.1 Connecting the Ethernet Port directly to a PC

You can connect the Ethernet port on the **VS-3232DVI** to the Ethernet port on your PC via a crossover cable with RJ-45 connectors.

This type of connection is recommended for identification of the factory default IP Address of the **VS-3232DVI** during the initial configuration

To configure your PC after connecting the Ethernet port:

1. Right-click the **My Network Places** icon on your desktop.
2. Select **Properties**.
3. Right-click **Local Area Connection Properties**.
4. Select **Properties**.
   The **Local Area Connection Properties** window appears.
5. Select the **Internet Protocol (TCP/IP)** and click the **Properties** Button.

1 After connecting the Ethernet port, you have to install and configure your Ethernet Port. For detailed instructions, see the Ethernet Configuration Guide (Lantronix) in the technical support section on our Web site http://www.kramerelectronics.com

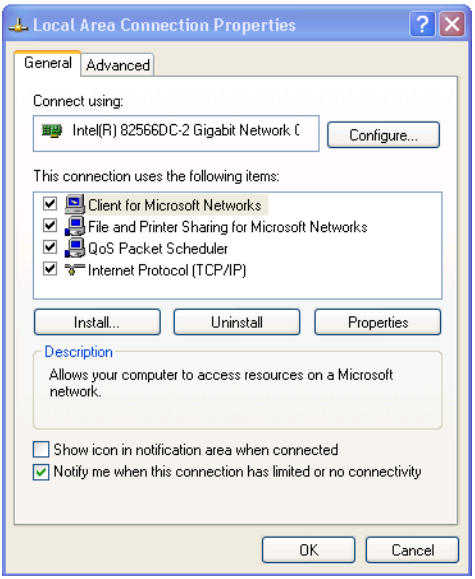


Figure 6: Local Area Connection Properties Window

6. Select **Use the following IP Address** and enter the details as shown in Figure 7.

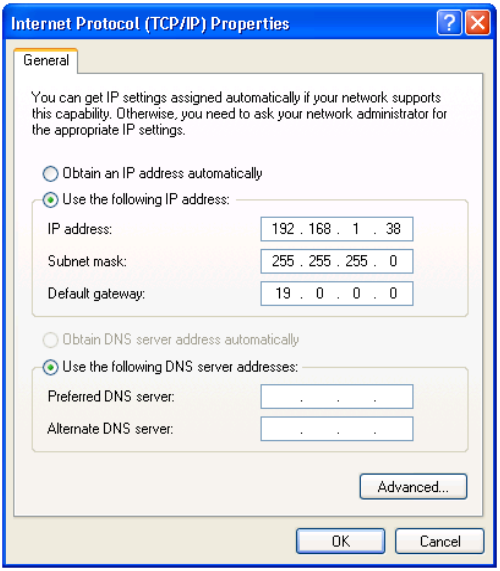

Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 1 . 38
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 19 . 0 . 0 . 0
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Figure 7: Internet Protocol (TCP/IP) Properties Window

7. Click **OK**.

6.2.2 Connecting to the Ethernet Port via a Network Switch/Hub

To connect to the Ethernet port on the VS-3232DVI via a network switch/hub:

- Connect the PC to the Ethernet network switch/hub using a straight through cable

7 Operating Your Video Matrix Switcher

This section describes:

- The startup display (see Section 7.1)
- Using the selector buttons (see Section 7.2)
- Confirming actions (see Section 7.3)
- Switching options (see Section 7.4)
- Locking and the front panel (see Section 7.5)

7.1 Startup Display

After switching on the power, the LCD display[1] shows the following screens in sequence.

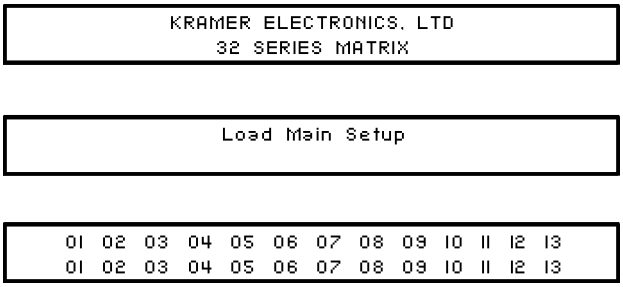


Figure 8: Default Startup Status Display Sequence

The **VS-3232DVI** does not have separate output and input buttons. Instead, the front panel includes a numeric keypad within the Selector Buttons area[2]. This numeric keypad lets you enter both the output and input numbers as well as various numeric configuration values (see Section 7.2).

When the unit is powered-on, the last matrix setup that was used is loaded. Use either the recall setup[3] (see Section 8.1.6) or default setup recall[4] (see Section 7.4.5) functions to retrieve other setups.

1 The text in the LCD Display may vary (according to machine settings)

2 See Table 1

3 Records a stored configuration from a preset

4 For quick retrieval, you can program a default setup that is commonly used

7.1.1 Viewing the Display

Figure 8 shows the output-input matrix on the LCD display. The LCD display can show only 13 out of the 32 available matrix combinations at once.

You can use the ◄ or the ► buttons on the front panel to shift the sliding window to the right or left to let you view any of the matrix combinations.

This sliding window function is enabled when:

- The switcher is in between operations[1]
- Recalling a setup using the ◄ or ► buttons

When entering an output/input combination, the contents of the LCD display automatically shift to indicate the current status of the selected output.

7.2 Using the Selector Buttons

The **VS-3232DVI** can handle two digit numbers as well as one digit numbers (for numbers under 10). When entering a one-digit number (for example 5), you can either press 0 followed by 5, or 5 followed by ENT.

The number 00 (or 0, ENT) is only relevant for an input and is used to disconnect the currently entered output number from the input.

For example, given the following display:

```
22 23 24 25 26 27 28 29
00 00 00 00 00 00 00 00
```

This display indicates that inputs 22 to 29 are disconnected from any output.

The ESC button is used to cancel an operation without affecting the current status. For example, if you enter an incorrect number by mistake, press the ESC button to cancel the operation.

Note: At any stage, if no button is pressed within approximately 15 seconds, the automatic timeout causes the **VS-3232DVI** to exit the operation and revert to the output/input display.

7.3 Confirming Actions

You can choose to work in the At Once (default[2]) or the Confirm mode.

In the At Once mode:

- The TAKE button does not light
- Pressing an OUT-IN combination implements the switch without further user confirmation

1 Waiting for its next operation while all previous operations are complete or cancelled

2 For all actions except storing/recalling

- You save time as execution is immediate and actions require no user confirmation
- No protection is offered to correct an erroneous action

In the Confirm mode:

- The TAKE button lights
- You enter an action and then confirm it by pressing the TAKE button
- Every action requires user confirmation, protecting against erroneous actions
- Execution is postponed until you confirm the action[1]

7.3.1 Toggling between the At Once and Confirm Modes

To toggle between the At Once and Confirm modes:

Note: If the TAKE button is flashing you cannot toggle between the At Once and Confirm modes. If the TAKE button is flashing, this indicates that an action is currently pending confirmation.

1. Press TAKE to toggle between the At Once mode and the Confirm mode.
   Actions now require user confirmation.
2. Press the lit TAKE button to toggle from the Confirm mode back to the At Once mode.
   Actions no longer require user confirmation and the TAKE button is no longer lit.

7.3.2 Confirming a Switching Action

Actions only require confirmation in the Confirm mode.

To confirm a switching action:

1. Using the numeric keypad, enter an output-input combination.
   The TAKE button flashes.
2. Press the flashing TAKE button to confirm the action.
   The action is confirmed and the TAKE button lights.

7.4 Switching Actions

This section describes how to:

- Switch one input to one output (see Section 7.4.1)
- Switch several inputs to several outputs (see Section 7.4.2)
- Turn off several outputs (see Section 7.4.3)

7.4.1 Switching one Input to one Output

To switch one input to one output:

1. Using the numeric keypad, enter the required output (in this example, 26).
   The following is displayed:

1 Failure to press the TAKE button within half minute (the timeout) will abort the action

```
22 23 24 25 26 27 28 29
00 00 00 00 00 00 00 00    In__ => Out 26
```

The left-hand side of the display shows a section of the output/input display, automatically sliding the content to include output 26.

2. Using the numeric keypad, enter the required input (in this example, 14):
   - In the At Once mode, the switching takes place immediately and the LCD display shows a segment of the input-output status that includes the switched input and output (for example, 26-14)
     In the Confirm mode, the LCD display shows the following:
     `In 14 => Out 26`
     Incomplete actions timeout after approximately 15 seconds.
   - In the Confirm mode, press the flashing TAKE button to switch the input to the output

7.4.2 Switching Several Inputs to Several Outputs

If you want to switch several inputs to several outputs you must be in the Confirm mode.

In the Confirm mode you can enter a batch of several actions and then confirm the batch by pressing TAKE once (simultaneously switching several output-input combinations).

To switch several inputs to several outputs in the Confirm mode:

1. Using the numeric keypad, enter an output-input combination.
   The TAKE button flashes.
2. Enter additional output-input combinations.
   The LCD display can show up to five keyed-in actions, as follows[1]:
   `09 => 06   05 => 07`
3. After entering all output/input combinations, press the flashing TAKE button to confirm the actions.
   The inputs switch to the respective outputs as shown on the LCD display and the TAKE LED lights solid.

7.4.3 Turning an Output Off

Turning an output off means that there is no input switched to this output.

To turn an output off:

1. Press MENU.
   The Menu buttons light and are enabled.
2. Press OFF (3).
   The following message is displayed:
   `out__ => OFF`

1 In this example, input 9 is set to switch to output 6 and input 5 is set to switch to output 7

3. Using the numeric keypad, enter the output to turn off.
   The output is turned off.

To turn an output off in the Confirm mode, repeat the steps above and then press the flashing TAKE button to confirm the action.

Alternatively, you can perform a switching operation (see Section 7.4.1) and set the input to 00.

7.4.4 Turning Off Several Outputs

To turn off several outputs in the Confirm mode, repeat the switching actions described in Section 7.4.2 but set the inputs to 00.

7.4.5 Recalling the Default Setup

You can store a commonly used setup as the default setup (see Section 8.2.6) which can be recalled at any time.

Note: This is not the setup that is loaded when the unit is turned on. When the unit is turned on, the setup that was last used before the unit was turned off is loaded.

To recall the default setup:

1. Press DEFAULT SETUP.
   The DEFAULT SETUP button flashes and the following message is displayed:
   ```
   recall DEFAULT setup
   press FLASHING button to confirm
   ```
2. Press DEFAULT SETUP.
   The following message is displayed:
   ```
   all Setups and Connections change
   press TAKE to confirm
   ```
   The TAKE button flashes.
3. Press TAKE.
   The default setup is recalled and the display reverts to the output-input display.

7.5 Locking the Front Panel Buttons

To prevent tampering with the unit or the settings from being changed accidentally via the front panel buttons, you can lock[1] the **VS-3232DVI**.

To lock the front panel buttons:

- Press and hold LOCK until the button lights.
  To unlock the front panel buttons, press and hold LOCK until the button is no longer lit.

1 You can still remotely operate via RS-232 or Ethernet even when the front panel is locked

8 Using the Configuration Menus

The configuration menus let you configure the **VS-3232DVI** to best suit your needs. There are two configuration menus:

- Setup Menu—those that are accessed on a regular basis (for example, storing setups and setting the delay), see Section 8.1
- Config Menu—those that are accessed only occasionally (for example, setting the interface or communication protocol), see Section 8.2

The following rules apply to the menu operation:

- If no selection is made within approximately 15 seconds, the operation times-out and the display reverts to the output/input display
- At any point in the Menu, press ESC to move up one level or press BREAKAWAY to exit the Menu altogether
- At any point in the Menu, only buttons that are active light or flash
- All of the procedures in this section assume that you are starting the procedure from the standard operational output/input display

8.1 Using the Setup Menu

The Setup Menu provides access to settings that are regularly changed and comprises the following options:

- **1: inXX=>ALL**, switching one input to all outputs (see Section 8.1.1)
- **3: outXX=OFF**, turning off an output (see Section 8.1.2)
- **7: EDID**, assignment to an output (see Section 8.1.3)
- **9: Delay** setting for an output (see Section 8.1.4)
- **4: store setup XX**, storing the setup in a preset (see Section 8.1.5)
- **6: recall setup XX**, recalling a preset (see Section 8.1.6)

8.1.1 Setup Menu—1: inXX=>ALL, Switching one Input to all Outputs

This option switches one input to all outputs.

To switch one input to all outputs:

1. Press MENU.
   The Setup Menu options are displayed.
2. Press 1 (ALL).
   The following is displayed:
   ```
   in__   => ALL
   ```
3. Using the numeric keys, enter the input to be switched to all outputs.
   The TAKE button flashes.
4. Press TAKE.
   The selected input is switched to all outputs.

The display reverts to the output/input display showing that the selected input is switched to all outputs.

8.1.2 Setup Menu—3: outXX=>OFF, Turning an Output Off

This option turns an output off.

To turn an output off:

1. Press MENU.
   The Setup Menu options are displayed.
2. Press 3 (OFF).
   The following is displayed:
   ```
   out__   => OFF
   ```
3. Using the numeric keys, enter the output to be turned off.
   The TAKE button flashes.
4. Press TAKE.
   The selected output is turned off.
   The display reverts to the output/input display showing that the selected output is turned off with the input being blank.

8.1.3 Setup Menu—7: EDID, Assignment to an Input

This option assigns an EDID to an input.

Each input on the **VS-3232DVI** has a factory default EDID loaded (see Section 13). The EDID for each input can be changed independently by uploading an EDID binary file to each input via the RS-232 port using Kramer EDID Sender software[1].

To assign an EDID to an input:

1. Press MENU.
   The Setup Menu options are displayed.
2. Press 7 (EDID).
   The following is displayed:
   ```
   SETUP EDID
   ENTER to View EDID and Set EDID
   ```
3. Press ENT.
   The current EDID matrix configuration is displayed.
4. Using the numeric keys, enter the input (in this example, 08) and output (in this example, 05) from which to read the EDID.
   The following is displayed:
   ```
   00 01 02 03 04 05 06 07 08
                                  05   out05 => in08
   ```
   The TAKE button flashes.

1 Available for download from http://www.kramerelectronics.com

5. Press TAKE.
   The EDID is stored and passed through to the output.
   The display reverts to the output/input display.

To view the EDID assignments:

1. Press MENU.
   The Setup Menu options are displayed.
2. Press 7 (EDID).
   The following is displayed:
   ```
   SETUP EDID
   ENTER to View EDID and Set EDID
   ```
3. Press ENT.
   The current EDID matrix configuration is displayed. In this example, input 07 is assigned to output 05.
   ```
   05  06  07  08  09  10
           05
   ```

8.1.4 Setup Menu—9: Delay, Setting for an Output

This option sets the time delay for an output which lapses between entering a switching action and the execution of the action. This delay can be set for each output independently. The delay is defined in units of 200ms and ranges from 0 to 15, providing delays of between 0 and 3 seconds (15 x 200ms = 3 seconds).

To set the execution delay for an output:

1. Press MENU.
   The Setup Menu options are displayed.
2. Press 9 (DELAY).
   The output/delay times display is shown.
3. Using the numeric keys, enter the output (in this example, 29).
   The following is displayed:
   ```
   22 23 24 25 26 27 28 29
   00 00 00 00 00 00 00 00   DLY__ =>out29
   ```
4. Using the numeric keys, enter the number of delay units.
5. Press TAKE.
   The selected output delay is set.
   The display reverts to the output/input display.

8.1.5 Setup Menu—4: store setup XX, Storing the Setup in a Preset

This option stores the current setup in a preset (1 to 59).

To store the current setup in a preset:

1. Press MENU.
   The Setup Menu options are displayed.

2. Press 4 (STO).
   The following is displayed:
   ```
   store => __
   ```
3. Using the numeric keys, enter the preset (1 to 59) in which to store the current setup.
   The following is displayed:
   ```
   Wait …..
   ```
   After a few seconds, if the preset is not empty, the following is displayed:
   ```
   SETUP NOT EMPTY
   CONFIRM
   ```
   The TAKE button flashes.
4. Press TAKE.
   The setup is stored in the selected preset for subsequent recall.
   The display reverts to the output/input display.

8.1.6 Setup Menu—6: recall setup XX, Recalling a Preset

This option recalls a stored configuration from a preset (1 to 59).

To recall a stored configuration:

1. Press MENU.
   The Setup Menu options are displayed.
2. Press 6 (RCL).
   The following is displayed:
   ```
   recall <= __
   ```
3. Using the numeric keys, enter the preset (in this example, 02) to recall.
   The following is displayed:
   ```
   Wait …..
   ```
   After a few seconds, the following is displayed on the right hand side:
   ```
   CONFIRM
   RECALL <= 02
   ```
   The TAKE button flashes.
4. Press TAKE.
   The preset is recalled.
   The display reverts to the output/input display.

8.2 Using the Config Menu

The Config Menu provides access to configuration settings that are not regularly changed and comprises the following options:

- Input signal detection (Section 8.2.1)
- Output load detection (Section 8.2.2)
- Interface configuration (Section 8.2.3)
- Interface Reply configuration (Section 8.2.4)
- Protocol configuration (Section 8.2.5)
- Storing the default setup (Section 8.2.6)
- Resetting the **VS-3232DVI** (Section 8.2.7)
- Firmware revision display (Section 8.2.8)

To enter the Config Menu press MENU twice. The MENU button lights and the following message is displayed:

```
Start configuration menu
MENU to view setups ENT to change them
```

When browsing through the configuration menu, enabled buttons light or flash.

Use the Config Menu as follows:

1. Press the MENU button to cycle through the menu items[1].
2. Press the ENT button to enter a submenu.
3. After entering a submenu, you can select between several options.
   Select an option by pressing one of the illuminated buttons in the Selector Buttons area.
4. After selecting the desired option, a description of the desired change is displayed and the TAKE button flashes.
5. Press the flashing TAKE button to confirm the change.
   A description of the current state is displayed for about one second. The unit automatically switches to the next item in the menu.

8.2.1 Config Menu—Input Signal Detection Display

This option displays a list of inputs and indicates on which of them signals have been detected.

To display a list of inputs and detected signals:

1. Press MENU twice.
   The following message is displayed:

```
start configuration menu
MENU to view setup ENT to change them
```

1 The LCD display shows the current status of the selected menu item

2. Press MENU.
   The following is displayed:

```
IN:   01 02 03 04 05 06 07 08 09 10 11
SIG:  Y  X  Y  Y  Y  Y  X  Y  Y  Y  X
```

   Y indicates that a signal is detected and X indicates that no signal is detected on the relevant input.
3. Do one of the following:
   - Press BREAKAWAY to exit the Config Menu
   - Wait approximately 15 seconds for the operation to time out
   - Press MENU to move to the next Config Menu option

8.2.2 Config Menu—Output Load Detection Display

This option displays a list of outputs and indicates which have loads attached to them.

To display a list of outputs and attached loads:

1. Press MENU twice.
   The following message is displayed:

```
start configuration menu
MENU to view setup ENT to change them
```

2. Press MENU until the following is displayed:

```
OUT:  01 02 03 04 05 06 07 08 09 10 11
LOAD: Y  X  Y  Y  Y   Y  X  Y  Y  Y X
```

   Y indicates that a load is attached and X indicates that no load is detected on the relevant output.
3. Do one of the following:
   - Press BREAKAWAY to exit the Config Menu
   - Wait approximately 15 seconds for the operation to time out
   - Press MENU to move to the next Config Menu option

8.2.3 Config Menu—Interface Configuration

This option lets you activate and deactivate the IR (infrared) and Ethernet interfaces.

To activate or deactivate the IR or Ethernet interfaces:

1. Press MENU twice.
   The following message is displayed:

```
start configuration menu
MENU to view setup ENT to change them
```

2. Press MENU until the following is displayed:

```
INTERFACE configuration
current:IR-ON      Ethernet-ON
```

The current status of the IR and Ethernet interfaces is displayed.

3. Press ENT to select the Interface Submenu.
4. Select 1 to modify the status of the IR interface or 2 to modify that status of the Ethernet interface (in this example, 2).
   The following is displayed:

   ```
   Ethernet interface setup
   1:make it ACTIVE          2:turn it OFF
   ```
5. Press 1 to activate the interface or 2 to deactivate it.
6. Press TAKE to confirm the action.
   The interface status is changed. After a few seconds the next option on the Config Menu is displayed.

8.2.4 Config Menu—Interface Reply Configuration

This option lets you switch the Reply configuration on or off. Setting Reply to on causes all interfaces that are set to on to accept and execute commands, and also to reply. Setting Reply to off causes all interfaces that are set to on to accept and execute commands, but not to reply.

To switch the Reply configuration on or off:

1. Press MENU twice.
   The following message is displayed:

   ```
   start configuration menu
   MENU to view setup ENT to change them
   ```
2. Press MENU until the following is displayed:

   ```
   interface REPLY configuration
   current interface REPLY - ON
   ```

   This indicates the current Reply configuration status.
3. Press ENT to enter the Reply Submenu.
   The following is displayed:

   ```
   interface REPLY configuration
   1:turn REPLY ON           2:never REPLY
   ```
4. Press 1 to switch Reply on or 2 to switch it off.
5. Press TAKE to confirm the action.
   A message is displayed indicating the new status of the Reply configuration. After a few seconds the next option on the Config Menu is displayed.

8.2.5 Config Menu—Protocol Configuration

This option is for future use. At the time of printing the **VS-3232DVI** only supports Kramer Protocol 2000.

8.2.6 Config Menu—Store Default Setup

This option lets you store the current setup as the default setup. The default setup can be recalled at any time using the DEFAULT SETUP button (see Section 7.4.5).

Note: This is not the setup that is loaded when the unit is switched on.

To store the current setup as the default setup:

1. Press MENU twice.
   The following message is displayed:
   ```
   start configuration menu
   MENU to view setup ENT to change them
   ```
2. Press MENU until the following is displayed:
   ```
   store DEFAULT setup
   press ENTER to store
   ```
3. Press ENT to store the current configuration as the default configuration.
   The following is displayed:
   ```
   current matrix stage is OKAY?
   press TAKE to confirm
   ```
4. Press TAKE.
   The following is displayed:
   ```
   current matrix stage
   store as DEFAULT setup
   ```
   This indicates that the current setup is stored as the default setup. After a few seconds the next option on the Config Menu is displayed.

8.2.7 Config Menu—Total Matrix Reset

This option lets you turn all outputs off or reset the unit to its factory default settings.

To reset the matrix setup:

1. Press MENU twice.
   The following message is displayed:
   ```
   start configuration menu
   MENU to view setup ENT to change them
   ```
2. Press MENU until the following is displayed:
   ```
   TOTAL MATRIX RESET
   exit = ESC    ENT = submenu
   ```
3. Press ENT to enter the Reset Submenu.
   The following is displayed:
   ```
   COMPLETELY MATRIX RESET
   1:ALL outputs OFF  2:Factory default
   ```
4. Press 1 to turn off all outputs or 2 to perform a factory reset of all options.

Caution: Selecting option 2 to perform a factory default reset clears all setups, options and configuration.

5. Press TAKE and wait a few seconds.
   The following is displayed:

```
Are you Absolutely sure !!!
Once more TAKE to confirm
```

6. Press TAKE.
   The following is displayed:

```
Matrix erased!!!
Please, wait …
```

   The matrix is erased. After a few seconds the next option on the Config Menu is displayed.

8.2.8 Config Menu—Display Firmware Versions

This option displays the main and front firmware versions.

To display the firmware versions:

1. Press MENU twice.
   The following message is displayed:

```
start configuration menu
MENU to view setup ENT to change them
```

2. Press MENU until the following is displayed:

```
Main Firmware Version:       1.0
Front Firmware Version:      1.0
```

3. Either:
   - Press BREAKAWAY to exit the Config Menu
   - Wait approximately 15 seconds for the operation to time out

9 Configuring the Number of Installed Input and Output Ports

When installing or removing a module, you need to set the number of input and output ports.

To set the number of input/output ports:

1. Press ESC, ENT and LOCK together.
   The following is displayed:

```
Configuration Device
```

2. Press ENT.
   The following is displayed:

```
Test Board: 0  MaxInput:32  MaxOutput:32
```

Note: The number of input and output ports can only be set in units of four, for example, 4 x 4, 24 x 24 or 32 x 32.

3. Using the numeric keys, enter the number of input and output ports installed.
   The TAKE button flashes.
4. Press TAKE.
   The number of installed ports is saved and the display reverts to the output/input display.

10 Installing and Using the Test Module to Troubleshoot Video Problems

The **VS-3232DVI** includes a test module which can act as a video signal generator and can be used to diagnose video issues in an operating environment.

The test module must be installed in the configuration before it can be used. When installing the test module, the number of configured inputs and outputs must be increased by one, for example, if your **VS-3232DVI** has eight inputs and eight outputs, you must configure the **VS-3232DVI** as 9 x 9. If your **VS-3232DVI** has 32 inputs and 32 outputs, you must configure the **VS-3232DVI** as 33 x 33.

10.1 Installing the Test Module

To install the test module in the configuration:

1. Press ESC, ENT and LOCK together.
   The following is displayed:
   ```
   Configuration Device
   ```
2. Press ENT.
   The following is displayed:
   ```
   Test Board: 0  MaxInput:32  MaxOutput:32
   ```
   where 0 indicates that the test module is not installed.
3. Using the numeric keys, press 1 to indicate that the test module is installed.
   The TAKE button flashes.
4. Press TAKE.
5. Increase the number of configured inputs and outputs by one (see Section 9).
   The test module is now installed and may be used.

10.2 Setting the Resolution of the Generated Video

The Resolution DIP-switch is used to set the resolution of the generated video as listed in Table 4.

Table 4: Available Resolutions of Generated Video

DIP-switch Position		Resolution
1	2	
OFF	OFF	1920 x 1200 @60Hz
OFF	ON	1600 x 1200 @60Hz
ON	OFF	1280 x 1024 @60Hz
ON	ON	1024 x 768 @60Hz

Figure 9 shows the Resolution DIP-switch both off (default).

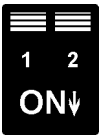


Figure 9: Resolution DIP-switch

10.3 Setting the Pattern of the Generated Video

The Pattern button is used to set the pattern of generated video. There are 32 available patterns. Press the button repeatedly to cycle through the patterns.

10.4 Using the Test Module to Troubleshoot Video Problems

The test module may be used in a number of ways to isolate video problems.

The following examples are based on the signal paths shown in Figure 10 and a **VS-3232DVI** device configured as follows:

- 32 inputs and 32 outputs
- The test module is installed and configured (see Section 10.1)
- 33 configured inputs and 33 configured outputs (see Section 9)

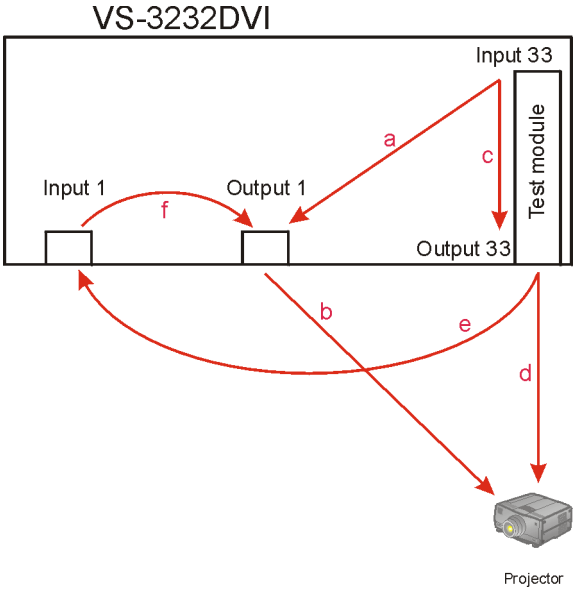


Figure 10: Signal Paths for Isolating problems

10.4.1 Testing the Projector Output

Signal path: c to d; d to projector

To test the projector output:

1. Configure Input 33 to Output 33 (see Section 7.4).
2. Connect Output 33 to the projector.
3. Set the generated video resolution (see Section 10.2).
4. Set the pattern for the generated video (see Section 10.3).
5. Verify that the projector output is as expected.

10.4.2 Testing the Output Signal Path to the Projector

Signal path: a to b; b to projector

To test the output signal path to the projector:

1. Configure Input 33 to Output 1 (see Section 7.4).
2. Connect Output 1 to the projector.
3. Set the generated video resolution (see Section 10.2).
4. Set the pattern for the generated video (see Section 10.3).
5. Verify that the projector output is as expected.

10.4.3 Testing the Input and Output Signal Path to the Projector

Signal path: c to e; e to f; f to b; b to projector

To test the input and output signal path to the projector:

1. Configure Input 33 to Output 33 (see Section 7.4).
2. Connect Output 33 to Input 1.
3. Configure Input 1 to Output 1.
4. Connect Output 1 to the projector.
5. Set the generated video resolution (see Section 10.2).
6. Set the pattern for the generated video (see Section 10.3).
7. Verify that the projector output is as expected.

11 Upgrading the VS-3232DVI Firmware

Upgrading the firmware on the **VS-3232DVI** can only be done by authorized service personnel.

12 Technical Specifications

Table 5 lists the technical specifications.

Table 5: Technical Specifications of the 32x32 DVI Matrix Switcher

INPUTS:	32 DVI, 1.2Vpp on DVI Molex 24-pin (F) connectors; DDC signal 5Vpp (TTL)
OUTPUTS:	32 DVI, 1.2Vpp on DVI Molex 24-pin (F) connectors; DDC signal 5Vpp (TTL)
BANDWIDTH:	Supports up to 1.65Gbps bandwidth per graphic channel
COMPLIANCE WITH STANDARDS:	Supports DVI 1.0
MAX RESOLUTION:	Up to UXGA; 1080p, 1920x1200
CONTROLS:	Front panel buttons, Infrared remote control transmitter, RS-232, Ethernet
SWITCHING:	Confirm or At Once for immediate switching
DIMENSIONS:	19in x 15in x 5U (W, D, H) rack-mountable
POWER SOURCE:	100-240V AC, 50/60Hz, 130VA
WEIGHT:	11.5kg (25.4lbs.) approx
ACCESSORIES:	Power cord, Infrared remote control transmitter

13 Factory Default EDID

```
Monitor
  Model name..... VS-32DVIS
  Manufacturer..... KRM
  Plug and Play ID..... KRM0200
  Serial number..... 1
  Manufacture date..... 2006, ISO week 12
  ------------------------
  EDID revision..... 1.3
  Input signal type..... Digital (DVI)
  Color bit depth..... Undefined
  Display type..... RGB color
  Screen size..... 700 x 390 mm (31.5 in)
  Power management..... Not supported
  Extension blocs..... None
  ------------------------
  DDC/CI..... n/a

Color characteristics
  Default color space..... Non-sRGB
  Display gamma..... 2.20
  Red chromaticity..... Rx 0.640 - Ry 0.341
  Green chromaticity..... Gx 0.286 - Gy 0.610
  Blue chromaticity..... Bx 0.146 - By 0.069
  White point (default).... Wx 0.284 - Wy 0.293
  Additional descriptors... None

Timing characteristics
  Horizontal scan range.... 31-94kHz
  Vertical scan range..... 50-85Hz
  Video bandwidth..... 170MHz
  CVT standard..... Not supported
  GTF standard..... Not supported
  Additional descriptors... None
  Preferred timing..... Yes
  Native/preferred timing.. 1280x768p at 60Hz (4:3)
    Modeline..... "1280x768" 79.500 1280 1344 1472 1664 768 771 778 798 +hsync +vsync
  Detailed timing #1..... 1920x1200p at 60Hz (16:10)
    Modeline..... "1920x1200" 154.000 1920 1968 2000 2080 1200 1203 1209 1235 +hsync -vsync

Standard timings supported
     720 x  400p at  70Hz - IBM VGA
     720 x  400p at  88Hz - IBM XGA2
```

640 x 480p at 60Hz - IBM VGA
640 x 480p at 67Hz - Apple Mac II
640 x 480p at 72Hz - VESA
640 x 480p at 75Hz - VESA
800 x 600p at 56Hz - VESA
800 x 600p at 60Hz - VESA
800 x 600p at 72Hz - VESA
800 x 600p at 75Hz - VESA
832 x 624p at 75Hz - Apple Mac II
1024 x 768i at 87Hz - IBM
1024 x 768p at 60Hz - VESA
1024 x 768p at 70Hz - VESA
1024 x 768p at 75Hz - VESA
1280 x 1024p at 75Hz - VESA
1152 x 870p at 75Hz - Apple Mac II
1360 x 765p at 60Hz - VESA STD
1280 x 800p at 60Hz - VESA STD
1440 x 900p at 60Hz - VESA STD
1280 x 960p at 60Hz - VESA STD
1280 x 1024p at 60Hz - VESA STD
1400 x 1050p at 60Hz - VESA STD
1680 x 1050p at 60Hz - VESA STD
1600 x 1200p at 60Hz - VESA STD

Report information
Date generated..... 12-Dec-10
Software revision..... 2.53.0.861
Data source..... File
Operating system..... 5.1.2600.2.Service Pack 3

Raw data
00,FF,FF,FF,FF,FF,FF,00,2E,4D,00,02,01,00,00,00,0C,10,01,03,81,46,27,78,0A,D5,7C,A3,57,49,9C,25,11,48,4B,FF,FF,80,8B,C0,81,0
0,95,00,81,40,81,80,90,40,B3,00,A9,40,0E,1F,00,80,51,00,1E,30,40,80, 37,00,6F,13,11,00,00,1E,28,3C,80,A0, 70,B0,23,40, 30,20, 36,
00,06,44,21,00,00,1A,00,00,00,FC,00,56, 53,2D,33,32,44,56,49,53,0A,20,20,20,00,00, 00,FD,00,32,55,1F,5E,11,00,0A, 20,20,20, 20,
20,20,00,39

14 Communication Protocols

Tables of HEX Codes for Serial Communication (Protocol 2000)

Table 6 lists the Protocol 2000[1] hex codes for switching inputs 1 to 32 to outputs 1 to 16. The communication parameters are 9600 baud, no parity, 8 data bits and 1 stop bit.

Table 6: Hex Table (IN 1-32 to OUT 1-16)

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6	OUT 7	OUT 8	OUT 9	OUT 10	OUT 11	OUT 12	OUT 13	OUT 14	OUT 15	OUT 16
IN 1	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 2	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 3	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 4	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 5	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 6	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 7	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 8	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 9	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 10	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81

1 Full details are available on our Web site at http://www.kramerelectronics.com

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6	OUT 7	OUT 8	OUT 9	OUT 10	OUT 11	OUT 12	OUT 13	OUT 14	OUT 15	OUT 16
IN 11	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 12	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 13	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 14	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 15	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 16	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 17	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 18	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 19	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 20	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 21	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 22	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 23	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6	OUT 7	OUT 8	OUT 9	OUT 10	OUT 11	OUT 12	OUT 13	OUT 14	OUT 15	OUT 16
IN 24	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 25	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 26	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 27	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 28	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 29	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 30	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 31	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 32	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0
	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81

Table 7 lists the hex codes for switching inputs 1 to 32 to outputs 17 to 32.

Table 7: Hex Table (IN 1-32 to OUT 17-32)

	OUT 17	OUT 18	OUT 19	OUT 20	OUT 21	OUT 22	OUT 23	OUT 24	OUT 25	OUT 26	OUT 27	OUT 28	OUT 29	OUT 30	OUT 31	OUT 32
IN 1	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 2	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81

	OUT 17	OUT 18	OUT 19	OUT 20	OUT 21	OUT 22	OUT 23	OUT 24	OUT 25	OUT 26	OUT 27	OUT 28	OUT 29	OUT 30	OUT 31	OUT 32
IN 3	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 4	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 5	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 6	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 7	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 8	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 9	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 10	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A	8A
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 11	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B	8B
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 12	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C	8C
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 13	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D	8D
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 14	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E	8E
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 15	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F	8F
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81

	OUT 17	OUT 18	OUT 19	OUT 20	OUT 21	OUT 22	OUT 23	OUT 24	OUT 25	OUT 26	OUT 27	OUT 28	OUT 29	OUT 30	OUT 31	OUT 32
IN 16	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 17	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 18	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 19	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 20	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 21	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 22	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 23	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 24	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 25	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 26	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A	9A
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 27	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B	9B
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 28	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C	9C
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81

	OUT 17	OUT 18	OUT 19	OUT 20	OUT 21	OUT 22	OUT 23	OUT 24	OUT 25	OUT 26	OUT 27	OUT 28	OUT 29	OUT 30	OUT 31	OUT 32
IN 29	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D	9D
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 30	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E	9E
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 31	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F	9F
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
IN 32	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0	A0
	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0
	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for three years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
   i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v) Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC* Rules and Regulations: Part 15: "Radio frequency devices Subpart B Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

* FCC and CE approved using STP cable (for twisted pair products)

For the latest information on our products and a list of Kramer distributors visit www.kramerelectronics.com **where updates to this user manual may be found. We welcome your questions, comments and feedback.**

Caution

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

Kramer Electronics, Ltd.
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P/N: 2900-000641 REV 2